

What is claimed is:

1 1. A method of providing a breathing gas comprising the  
2 steps of:

3 sensing a carbon-dioxide level associated with a  
4 patient breathing interface;

5 determining if the level of carbon-dioxide is  
6 increasing or decreasing;

7 if the level is decreasing, determining if the level  
8 of carbon-dioxide has crossed a threshold parameter;

9 if the carbon-dioxide level has crossed the threshold  
10 parameter, increasing the breathing gas pressure provided  
11 to the patient breathing interface;

12 decreasing the breathing gas pressure provided to the  
13 patient breathing interface after a predetermined period of  
14 time; and

15 the increasing and decreasing of breathing gas  
16 pressure maintaining a positive pressure sufficient to  
17 sustain open the airway of a patient wearing the breathing  
18 interface.

1 2. The method of claim 1 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises sensing the carbon-dioxide level using  
4 infrared light.

1 3. The method of claim 1 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises emitting infrared light within the  
4 patient breathing interface.

1 4. The method of claim 3 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises detecting infrared light within the  
4 patient breathing interface.

1 5. The method of claim 3 wherein the step of emitting  
2 comprising emitting infrared light into a fiber optic cable  
3 connected to the patient breathing interface.

1 6. The method of claim 4 wherein the step of detecting  
2 infrared light comprising sensing the infrared light in a  
3 fiber optic cable coupled to the patient breathing  
4 interface.

1 7. The method of claim 1 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises sensing the carbon-dioxide level vented  
4 from the patient breathing interface.

1 8. The method of claim 1 further comprising the step of  
2 initiating a monostable timer if the carbon-dioxide level  
3 has crossed the threshold parameter.

1 9. The method of claim 8 wherein the step of decreasing  
2 the breathing gas pressure provided to the patient  
3 breathing interface after a predetermined period of time  
4 comprises decreasing the breathing gas pressure upon  
5 expiration of the monostable timer.

1 10. A method of providing a breathing gas to a patient  
2 comprising the steps of;

0966274-0966274

AL  
ent

3       sensing a carbon-dioxide level associated with a  
4 patient breathing interface;  
5       determining if the sensed level of carbon-dioxide is  
6 increasing or decreasing;  
7       if the sensed carbon-dioxide level is increasing,  
8 determining if the sensed carbon-dioxide level has crossed  
9 a first threshold parameter;  
10       if the sensed carbon-dioxide level has crossed the  
11 first threshold parameter, decreasing the breathing gas  
12 pressure provided to the patient breathing interface;  
13       if the sensed carbon-dioxide level is decreasing,  
14 determining if the sensed carbon-dioxide level has crossed  
15 a second threshold parameter;  
16       if the sensed carbon-dioxide level has crossed the  
17 second threshold parameter, increasing the breathing gas  
18 pressure provided to the patient breathing interface; and  
19       the increasing and decreasing of breathing gas  
20 pressure maintaining a positive pressure sufficient to  
21 sustain open the airway of a patient wearing the breathing  
22 interface.

1   11. The method of claim 10 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises sensing the carbon-dioxide level using  
4 infrared light.

1   12. The method of claim 10 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises emitting infrared light within the  
4 patient breathing interface.

2-  
acc

09674-09601  
FO220-424960

1 13. The method of claim 12 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises detecting infrared light within the  
4 patient breathing interface.

1 14. The method of claim 12 wherein the step of emitting  
2 comprising emitting infrared light into a fiber optic cable  
3 coupled to the patient breathing interface.

1 15. The method of claim 14 wherein the step of detecting  
2 infrared light comprising sensing the infrared light in a  
3 fiber optic cable coupled to the patient breathing  
4 interface.

1 16. The method of claim 10 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises sensing the carbon-dioxide level vented  
4 from the patient breathing interface.

1 17. A method of providing a breathing gas to a patient  
2 comprising the steps of:

3 sensing a carbon-dioxide level associated with a  
4 patient breathing interface;

5 determining if the sensed level of carbon-dioxide is  
6 increasing or decreasing;

7 if the sensed level of carbon-dioxide is decreasing,  
8 determining whether the sensed level of carbon-dioxide at  
9 or below a threshold level;

10 if the sensed level of carbon-dioxide is at or below  
11 the threshold level, increasing the pressure of the  
12 breathing gas for a fixed period of time;

12

13 decreasing the pressure of the breathing gas upon  
14 expiration of the fixed period of time;

15 the increasing and decreasing of the pressure of the  
16 breathing gas maintaining a positive pressure sufficient to  
17 sustain open the airway of the patient.

1 18. The method of claim 17 wherein the step of increasing  
2 the pressure of the breathing gas for a fixed period of  
3 time comprises initiating a monostable timer.

1 19. The method of claim 17 wherein the step of sensing a  
2 carbon-dioxide level associated with a patient breathing  
3 interface comprises the step of sensing a carbon-dioxide  
4 level with infrared light.

1 20. The method of claim 19 wherein the step of sensing a  
2 carbon-dioxide level with infrared light comprises the step  
3 of sensing a carbon-dioxide level vented from the patient  
4 breathing interface.

1 21. A method of administering a CPAP therapy comprising  
2 the steps of:

3 monitoring the level of carbon-dioxide vented from a  
4 patient breathing interface;

5 if the level of carbon-dioxide vented is decreasing,  
6 determining of the level of carbon-dioxide is at or below a  
7 threshold value;

8 if the level of carbon-dioxide vented is at or below  
9 the threshold value, providing a first positive airway  
10 pressure to the patient breathing interface for a fixed  
11 period of time; and

096724-096724

ay

096674-09204

12 upon the expiration of the fixed period of time  
13 providing a second positive airway pressure to the patient  
14 breathing interface.

1 22. A system for administering a breathing gas to a  
2 patient breathing interface comprising:

3 (a) a blower for providing positive pressure  
4 breathing gas;

5 (b) a controller in circuit communication with the  
6 blower;

7 (c) an infrared light emitter and detector in circuit  
8 communication with the controller for detecting the level  
9 of carbon-dioxide associated with the patient breathing  
10 interface; and

11 (d) logic for increasing and decreasing the level of  
12 the positive pressure breathing gas based on the level of  
13 carbon-dioxide detected to maintain open the airway of a  
14 patient.

1 23. The system of claim 22 wherein the logic for  
2 increasing and decreasing the level of the positive  
3 pressure breathing gas based on the level of carbon-dioxide  
4 associated with the patient breathing interface comprises  
5 logic for comparing the level of carbon-dioxide associated  
6 with the patient breathing interface to a threshold  
7 parameter.

1 24. The system of claim 22 further comprising a monostable  
2 timer having a variable off time period and predetermined  
3 on time period.

2  
1 25. The system of claim 22 further comprising a optical  
2 fibers coupled to the infrared emitter and detector.

1 26. The system of claim 22 wherein the infrared emitter  
2 and detector are located within a housing accommodating the  
3 controller.

1 27. The system of claim 22 wherein the infrared emitter  
2 and detector are located within the patent breathing  
3 interface.

1 28. The system of claim 22 wherein the infrared emitter  
2 and detector are located proximate to a vent of the patient  
3 breathing interface.

090724-092701  
FD/260-4229660